

WHAT IS CLAIMED IS:

1. A spread-spectrum signal receiver apparatus for receiving a spread-spectrum signal and demodulating transmit data from the signal, comprising:
 - 5 a receive unit for receiving a spread-spectrum signal that has been spread by a spreading code comprising a combination of a first code that varies depending upon spreading factor and a second code that differs for every user;
 - 10 an interference canceller for producing a replica of an interference signal from the receive signal using a despreading code comprising a combination of the first code, which is regarded as a code decided based upon a minimum spreading factor, and the second code that differs for every user, and generating a signal obtained by subtracting the replica from the receive signal; and a demodulator for demodulating transmit data, from the signal from which the replica has been subtracted, by despread processing using a spreading code on the transmit side.
 - 20 2. The apparatus according to claim 1, wherein said interference canceller includes:
 - a despread for despreading the receive signal using a despreading code comprising a combination of at least the first code decided based upon the minimum spreading factor and the second code that differs for every user;
 - 25 a demodulator for demodulating transmit data from

the despread signal;

an attenuator for multiplying the demodulated transmit data by a prescribed damping coefficient; and

- 5 a spreader for generating the replica by spreading the attenuated transmit data using a code identical with the despreading code.

3. The apparatus according to claim 1 or 2, wherein the first code decided by the spreading factor is obtained by systematically varying a code that conforms to the 10 minimum spreading factor.

4. An interference cancellation apparatus for receiving a spread-spectrum signal that has been spread by a spreading code comprising a combination of a first code that varies depending upon spreading factor and a second 15 code that differs for every user, and generating a replica of an interference signal from the receive signal, comprising:

a receiver for receiving the spread-spectrum signal; and

20 a replica producing unit for producing a replica of the interference signal from the receive signal using a despreading code comprising a combination of the first code, which is regarded as a code decided based upon a minimum spreading factor, and the second code that 25 differs for every user.

5. The apparatus according to claim 4, wherein said replica producing unit includes:

a despreader for despread the receive signal

using the despreading code comprising a combination of the first code and the second code that differs for every user;

a demodulator for demodulating transmit data from
5 the despread signal;

an attenuator for multiplying the demodulated transmit data by a prescribed damping coefficient;

a spreader for generating the replica by spreading the attenuated transmit data using a code identical with
10 the despreading code.

6. The apparatus according to claim 5, further comprising a damping-coefficient altering unit for setting the damping coefficient to zero upon detecting that data is not being transmitted.

15 7. The apparatus according to claim 5, further comprising a damping-coefficient altering unit for altering a damping coefficient of a data channel based upon the ratio of receive-signal power of the data channel to receive-signal power of a control channel,
20 wherein the data and control channels are included in the receive signal.

8. The apparatus according to claim 4, wherein said replica producing unit includes:

a first despreader for despreading a receive signal
25 using the despreading code comprising the combination of the first code, which is regarded as a code decided based upon a minimum spreading factor, and the second code that differs for every user;

a spreading-factor estimation unit for estimating the spreading factor SF on the transmit side;

- a second despreader for generating a despread signal of the receive signal by integrating, m times, 5 the result of despreading, which is output from said first despreader, based upon the despreading code conforming to the minimum spreading factor, where m (an integer) represents the ratio of the estimated spreading factor to the minimum spreading factor;
- 10 a demodulator for demodulating the transmit data from the despread signal;
- an attenuator for multiplying the demodulated transmit data by a prescribed damping coefficient; and
- 15 a spreader for generating the replica by spreading the attenuated transmit data using a code identical with the despreading code.

9. The apparatus according to claim 8, wherein said spreading-factor estimation unit estimates the spreading factor based upon the ratio of receive-signal power of a 20 data channel to receive-signal power of a control channel, wherein the data and control channels are included in the receive signal.

10. The apparatus according to claim 8, further comprising a damping-coefficient altering unit for 25 setting the damping coefficient of a data channel to zero upon detecting that data is not being transmitted on the data channel.

11. The apparatus according to claim 8, further

comprising a damping-coefficient altering unit for
altering a damping coefficient of a data channel based
upon the ratio of receive-signal power of a data channel
to receive-signal power of a control channel.